

CLAIMS

1. A method for image reconstruction for images acquired in a non-isocentric path, said method comprising:

5 varying a distance between an object and at least one of a detector and a source to form a virtual isocenter;

maintaining an object at said virtual isocenter during imaging of said object;

normalizing a magnification change in image data obtained as said virtual isocenter is maintained; and

10 reconstructing an image of said object based on said image data and said normalized magnification change.

2. The method of claim 1, further comprising tracking a position of said detector and a position of said object.

15

3. The method of claim 1, wherein said varying step further comprises varying said distance between image exposures.

20

4. The method of claim 1, further comprising determining a distance between said detector and a source.

5. The method of claim 1, further comprising determining a position of at least one of said detector and a source with respect to said object.

25

6. The method of claim 1, further comprising mounting said detector and a source on a C-arm.

30

7. The method of claim 6, further comprising moving said C-arm in a non-circular path to move said detector and said source around said object while varying said distance between said detector and said object.

8. The method of claim 1, wherein said reconstructing step further comprises reconstructing a three-dimensional image of said object based on said image data and said normalized magnification change.

5 9. A method for forming a virtual isocenter in an imaging system, said method comprising:

determining a distance between an object to be imaged and at least one of a detector and a source;

varying said distance between image exposures; and

10 adjusting image data obtained from said image exposures for a change in magnification between image exposures.

10. The method of claim 9, wherein said determining step further comprises determining a distance between said detector and said object using a tracking system.

15

11. The method of claim 10, wherein said tracking system comprises an electromagnetic tracking system for determining a position of said detector with respect to said object.

20

12. The method of claim 9, further comprising reconstructing at least one image of said object from said image data adjusted for said change in magnification.

25 13. The method of claim 9, further comprising maintaining a position of said object at a virtual isocenter formed by varying said distance between said object and at least one of said source and said detector.

14. The method of claim 9, further comprising moving a support including said detector and a source in an orbital motion to move said detector and said source around said object while varying said distance between said detector and said object.

30

15. A system for processing images obtained using non-isocentric motion, said system comprising:

a source for providing an emission used to generate an image of an object;
a detector for receiving said emission after said emission has traveled through said
object to produce image data;

5 a support for positioning said source and said detector, said support varying at
least one of a distance between said detector and said object and a distance between said
source and said object when obtaining said image data from said emission;

 a tracking system for obtaining position data relating to at least one of said source,
said detector, and said object; and

10 an image processor for reconstructing at least one image using said image data
and said position data, said image processor compensating for a change in magnification
between image data when reconstructing said at least one image.

15 16. The system of claim 15, wherein said change in magnification is due to
varying at least one of a distance between said detector and said object and a distance
between said source and said object.

20 17. The system of claim 15, wherein said tracking system comprises an
electromagnetic tracking system.

 18. The system of claim 17, wherein said tracking system comprises an
electromagnetic sensor located on said detector and an electromagnetic transmitter
located on said object.

25 19. The system of claim 15, wherein said support comprises a C-arm.

 20. The system of claim 15, further comprising a positioning device for
positioning said object with respect to said support.

30